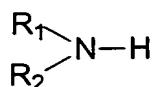


CLAIMS

1. A liquid resin, intended in particular for the sizing of mineral fibers,
5 exhibiting a dilutability in water at 20°C at least equal to 1 000%, **characterized in that** it is composed for at least 70% by weight of condensates obtained from a phenolic compound, from formaldehyde and from an aminoalcohol according to the Mannich reaction.
2. The resin as claimed in claim 1, **characterized in that** the phenolic
10 compound is phenol, a cresol, resorcinol or a mixture of these compounds.
3. The resin as claimed in claim 1 or 2, **characterized in that** the aminoalcohol is chosen from the compounds of formula



in which R₁ and R₂, which are identical or different, represent H or a linear or
15 branched C₁-C₁₀, preferably C₂-C₅, hydrocarbonaceous chain which can include one or more unsaturations and one or more OH radicals, at least one of R₁ or R₂ including at least one OH radical.

4. The resin as claimed in claim 3, **characterized in that** the OH radical is carried by the terminal carbon atom of the hydrocarbonaceous chain and, preferably, each R₁ and R₂ radical carries a hydroxyl functional group on the terminal carbon of the hydrocarbonaceous chain.
20
5. The resin as claimed in claim 4, **characterized in that** the aminoalcohol is monoethanolamine or diethanolamine.
25
6. The resin as claimed in one of claims 1 to 5, **characterized in that** it exhibits a level of free formaldehyde of less than 0.4%.
7. The resin as claimed in one of claims 1 to 6, **characterized in that** it exhibits a level of free phenolic compound of less than 0.02%.
8. The resin as claimed in one of claims 1 to 7, **characterized in that** it exhibits a level of free formaldehyde of less than 0.25%, a level of phenolic compound of less than 0.01% and an infinite dilutability.
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9. The resin as claimed in one of claims 1 to 8, *characterized in that* it exhibits a level of ash of less than 0.04% by weight of dry resin.

APPENDIX

10. A process for the preparation of the resin as claimed in one of claims 1 to 9, which consists:

- in reacting a phenolic compound, formaldehyde and an aminoalcohol according to the Mannich reaction in a formaldehyde/phenolic compound molar ratio of greater than 1, the formaldehyde and the aminoalcohol being reacted simultaneously with the phenolic compound,
- and in cooling the reaction mixture.

5 11. The process as claimed in claim 10, **characterized in that** the formaldehyde and the aminoalcohol are reacted gradually with the phenol.

10 12. The process as claimed in claim 10 or 11, **characterized in that** the formaldehyde, the aminoalcohol and the phenolic compound are reacted in a formaldehyde/phenolic compound and aminoalcohol/phenolic compound molar ratio of between 2 and 3, preferably equal to approximately 3, until a degree of conversion of the phenolic compound of equal to or greater than 99% is obtained.

15 13. The process as claimed in one of claims 10 to 12, **characterized in that** the reaction temperature is between 60 and 100°C and preferably equal to approximately 75°C.

20 14. The process as claimed in claim 10, **characterized in that** the formaldehyde and aminoalcohol are introduced separately into the phenolic compound.

15 15. The process as claimed in claim 10, **characterized in that** the formaldehyde and aminoalcohol are introduced into the phenolic compound after having been mixed beforehand.

25 16. A sizing composition for mineral fibers, comprising a resin in accordance with one of claims 1 to 9, a crosslinking agent, and optionally additives.

17. The composition as claimed in claim 16, **characterized in that** it comprises, expressed as parts of dry matter, from 18 to 65 parts by weight of resin and from 10 to 82 parts by weight of crosslinking agent.

30 18. The composition as claimed in claim 16 or 17, **characterized in that** the crosslinking agent is a compound including at least two functional groups capable of reacting with the amine functional groups or the hydroxyl functional groups of the resin.

19. The composition as claimed in claim 18, **characterized in that** the crosslinking agent is formaldehyde, an amine, such as HMTA, an acid, such as

phthalic acid, isophthalic acid, terephthalic acid and citric acid, a poly(carboxylic or acrylic acid) of high molecular mass, of the order of 500 and preferably between 1 000 and 5 000, an anhydride of these acids or a mixture of these compounds.

5 20. A mineral fiber coated with the sizing composition as claimed in one of claims 16 to 19.

21. The mineral fiber as claimed in claim 20, **characterized in that** it is composed of glass or of rock.

10 22. A tissue mat of mineral fibers, in particular of glass fibers, **characterized in that** it comprises a fiber as claimed in claim 20 or 21 and that it has a weight per unit area of between 10 and 300 g/m².

23. A thermal and/or sound insulation product obtained by forming a blanket of sized mineral fiber as claimed in either of claims 20 and 21.

15 24. The product as claimed in claim 23, **characterized in that** it additionally comprises a fiber tissue mat as claimed in claim 22 positioned over at least one of the external faces.